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NOTES ON THE GENERA *AGRIOGOMPHUS* SELYS AND *ISCHNOGOMPHUS* WILLIAMSON WITH THE DESCRIPTION OF THE MALE OF *AGRIOGOMPHUS SYLVICOLA* SELYS (ODONATA)

By Lt.-Col. F. C. Fraser, I.M.S. Retd., F.R.E.S.

I am indebted to Mr. W. D. Hincks of Leeds for the opportunity of studying and reporting on one of the most interesting dragonflies that has been discovered for some years. The specimen is a male which Mr. Hincks has correctly determined as an *Agriogomphus*, and is of first importance as it now supplies us with the male generic characters which have remained unknown since the creation of the genus by Selys in 1869. Williamson, in 1918, described the male of an *Agriogomphus*, but he failed to recognise it as such and made it the genotype of a new genus *Ischnogomphus*; his definition included some characters which are of specific rather than generic value and these are the only ones which separate *Ischnogomphus* from *Agriogomphus*.

Historical.

1869. Selys described the genus *Agriogomphus* with genotype *Agriogomphus sylvicola* sp. n. The latter was described from two females, the habitats of which the author gave as Ega and S. Paulo, Upper Amazon. The type, now in the Brussels Museum, bears a label "St Paulo", indicating the village some 400 miles up-river from Ega, where Bates, who took the specimens, spent some five months collecting. (The full name of this locality is Saõ Paulo de Olivença.) The great distance separating Ega from S. Paulo argues a wide distribution for *A. sylvicola* and it is quite possible that the species may be found on most tributaries of the Amazon and right up to their sources in the western watershed, otherwise it would be difficult to account for the presence of a second species in Colombia on the western side of the watershed, and another habitat in Peru.

1873. Under the description of *Cyanogomphus*, Selys emended and added to the description of the genus *Agriogomphus*.

1903. Needham published a figure of the wings of a supposed *Agriogomphus*. His material was a shrivelled teneral male specimen of which only the wings were preserved. It was later shown by Williamson to be an *Archaeogomphus*.

1909. Ris published a wing-figure of a supposed *Agriogomphus* but gave no description of the species.

1913. Ris now published the description of the species which he named *Agriogomphus infans*, his material being two specimens only, both belonging to the female sex.

1918. Williamson published the description of a third supposed *Agriogomphus—A. hamatus*, from a number of both sexes; in the same paper he described a fourth, from a female, but did not name it.

1919. Williamson created the new genus *Archaeogomphus* with genotype *Agriogomphus hamatus* Will. In this paper he showed that both Needham's wing-figure and Ris's *A. infans* were to be referred to the new genus. In the interval between his 1918 and 1919 papers he had received a photograph from Brussels Museum of the wings of the type of *Agrio-*

gomphus sylvicola, and from a comparison of this with the wing venation of *A. hamatus* it at once became evident that the two were not congeneric. The venation of *hamatus* was of a much more open character than that of *sylvicola*: its pterostigma covered only $2\frac{1}{2}$ cells as against double that number in *sylvicola*. Thus in 1919 the position of the genus *Agriogomphus* was right back to its starting-point in 1869; it was known only from the female sex and, from lack of knowledge of the male characters, the definition of the genus remained incomplete. Mr. Hinck's specimen now enables me to fill in this gap.

1919. Williamson described a new genus *Ischnogomphus* with *Ischnogomphus jessei* sp. n. as genotype. His material was a single male from near Puerto Berrio, Colombia. This locality lies nearly 800 miles from S. Paulo as the aeroplane flies but would not be more than 40 to 50 miles between the sources of the Amazon and Magdalena rivers. Thus if, as

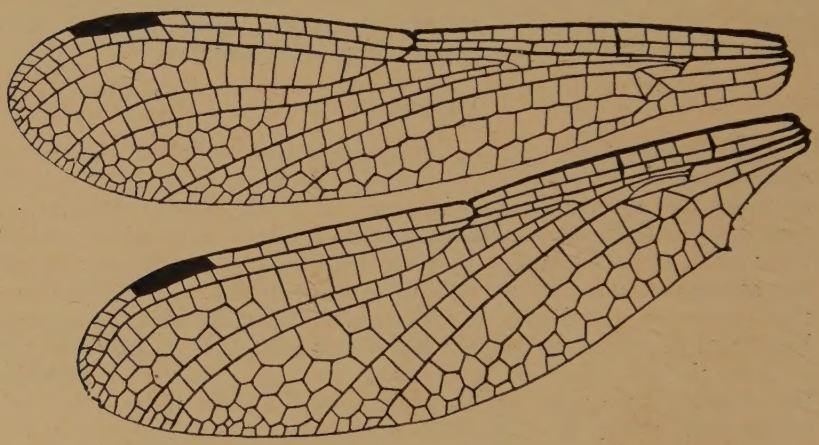

Fig. 1.—Wings of *Agriogomphus sylvicola* Selys, male, from the allotype.

I believe, *Ischnogomphus jessei* is a true *Agriogomphus*, then the Andean watershed offers no barrier to the spread of the species. Curiously enough, it does not appear to have occurred to Williamson that his specimen might be an *Agriogomphus*, for he says that it lies nearest *Cyanogomphus*, which is its closest ally.

Agriogomphus Selys (emend.).

Agriogomphus Selys, 1869, *Bull. Acad. Belg.* (2) **28** : 189.
Selys, 1873, *loc. cit.* (2) **35** : 754.
Williamson, 1918, *Occas. Pap. Mus. Zool. Michigan* **59** : 1.
Ischnogomphus Williamson, 1918, *loc. cit.* **52** : 6.
Agriogomphus Williamson, 1919, *loc. cit.* **63** : 2.

Male: Wings very narrow, apices rounded, base of hind-wing very narrow, forming a very obtuse angle with the posterior border of wing and with tornus reduced to a small projecting angle furnished with a small but conspicuous spine; anal-loop rudimentary, of 2 cells only; anal triangle and membrane absent; discoidal field in both fore- and hind-wings *of* 1 *or* 2 *rows of cells* to nearly as far as border of wing; 11–12 antenodals and 9 postnodals to fore-wings but these very irregular; a basal incomplete antenodal always present in all wings; the first (complete) and the fifth antenodals the primaries; sectors

of arculus strongly arched, converging immediately after origins, then separating slightly and running almost parallel for a short distance; *discoidal cells very variable*, the costal side in both fore- and hind-wings often markedly angulated (as in *Tetrathemis* etc.): that of fore-wing small, equilateral when normal: that of hind-wing, when normal, with basal side slightly shorter than the costal and distal sides. Pterostigma elongate, covering 4–5 cells, poorly braced.

Frons very depressed; occiput depressed; 3rd segment of antennae very short. Legs short, *tibiae four-sided*; femoral spines minute, very short and numerous. General colouring of body pale bluish-green with poorly contrasted markings on head and thorax.

Abdomen long and narrow, but slightly expanded analwards; genitalia on 2nd segment conspicuous by the very long and slim posterior hamules; anterior hamules short, ear-shaped; penis of *Gomphus* (*sens. strict.*) shape, flagellae short and curling. Anal appendages: superiors as long as segment 10, rather shortly conical, acuminate at apex and furnished below with a stout ventral spine, the apex of which curls out and then ends obtusely and directed somewhat anteriorwards: inferior appendage shorter, deeply divided into two parallel branches which embrace the two ventral spines of the superiors.

Female: resembles the male in most respects; leg armature similar; base of wings very narrow, that of hind-wing not marked off from the posterior border with which it forms a continuous strongly bevelled curve; vulvar scale short, deeply incised. Abdomen very long and slender, but slightly dilated analwards.

Habitat: Brazil, Peru and Colombia.

The genus *Ischnogomphus* agrees in every respect with *Agriogomphus*, shape of anal appendages, formation of genitalia and venation of wings save that, in *I. jessei*, there are 2 rows of discoidal cells in the wings instead of only 1, as in *A. sylvicola*: this I regard as a specific character similar to what is found in genera such as *Diplacina*, *Zygonyx*, *Lyriothemis*, *Macromidia* etc., so that it becomes necessary to modify the Selysian generic description in this respect.

Agriogomphus sylvicola Selys, 1869.

Agriogomphus sylvicola Selys, 1869, *Bull. Acad. Belg.* (2) **28** : 190.
Agriogomphus sylvicola Williamson, 1918, *Occas. Pap. Mus. Zool. Michigan* **63** : 8, pl. 1, f. 1. (wings).

Male. Abdomen 26·5 mm. Hind-wing 20 mm.

Head: labium greenish-grey, labrum and whole of face and frons dull bluish-green, vertex posterior to ocelli obscurely blackish-brown, occiput bluish-green as also behind eyes, but the swollen border here and a small but conspicuous spot below bordering the eyes black.

Prothorax olivaceous, immaculate; thorax bluish-green on dorsum with blackish-brown markings, and dull olivaceous on the sides and beneath. The black on dorsum enclosing two broad antehumeral stripes and two narrower humeral ones of the ground colour; the former are of the conventional *Gomphus* (*sens. strict.*) shape, very broad below where they meet over the dorsum at a point only, and tapering to an obtuse point above, which falls just short of the antealar sinus, which latter is framed in black. The humeral stripes are broad below, then very slim and very sinuous and again expand above in the form of a small knob which evidently represents the conventional upper humeral spot of *Gomphus*. Laterally are two long stripes which are poorly defined in their limits, one bordering the humeral suture, the other the first lateral suture. Legs dull olivaceous or bluish-green, with the knees and outer sides of the anterior tibiae and femora blackish-brown; spines black, forming a broad, thickly-set field of minute spines on the femora. (Attached to the middle right tibia of the unique specimen is the head and thorax of a small ant, its jaws clasping the limb tightly.)

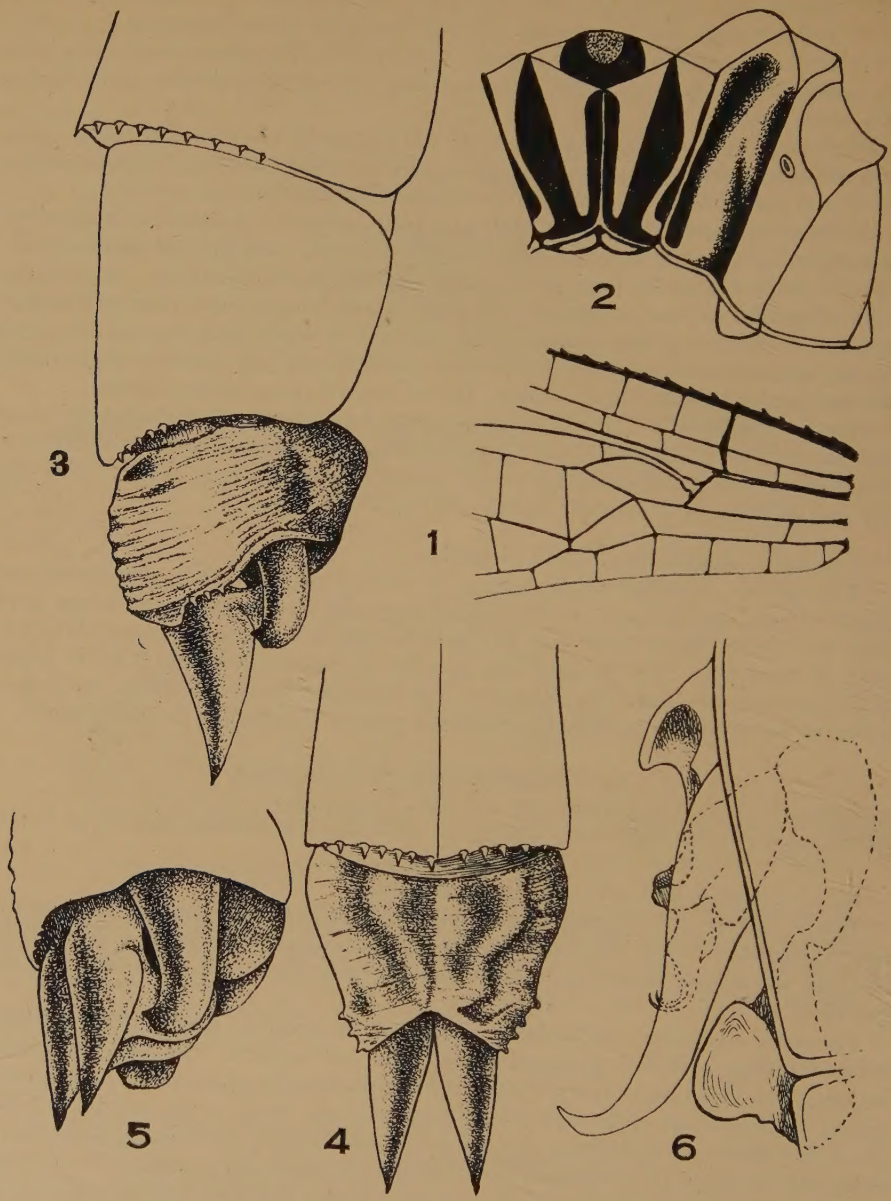

FIG. 2.—Details of *Agriogomphus sylvicola* Selys, male. 1, Base of fore-wing enlarged to show the formation of arculus and discoidal cell. 2, Markings of thorax. 3, Anal appendages and terminal segments of abdomen seen from the right side. 4, The same viewed from the dorsum. 5, Postero-lateral view of anal appendages. 6, Genitalia viewed from the left side.

Wings hyaline; nodal index—$\frac{9-11}{9-8}\Big|\frac{12-9}{9-9}$; discoidal cells of right fore-wing and left hind-wing (of the specimen under description) have the costal sides markedly angulated, the other two cells are normal triangles; pterostigma black, braced in some wings, in others not at all, covering 5 cells. Abdomen black: segments 1 and 2 olivaceous green, the transverse carina of the latter finely black; segments 3 and 4 with the mid-dorsal carina finely pale olivaceous green nearly to apical ends of segments and with the sides basal to the transverse carinae pale bluish-white; segments 5 and 6 have the whole of the basal area pale bluish-white save for a small ill-defined blackish-brown mark; segment 7 with its basal half conspicuously bluish-white; 8 to 10 black, the former segment prolonged apically at its dorsal carina. Anal appendages: almost exactly similar to those described for *Ischnogomphus jessei* Will. The superiors palest yellow, as long as segment 10, the ventral tooth considerably more robust than in *jessei*, its apex obtuse. Inferior appendage blackish, projecting straight posteriorwards, apex very obtuse and with a short upper subapical spine. Genitalia: anterior hamules short, ear-shaped: posterior hamules very long and sinuous, both pairs exactly similar to those of *I. jessei*.

Habitat: Brazil: Ega and S. Paulo (de Olivença); Peru: Katzenbach (*Mishuyacu*), 15 km. v. Iquitos, 10.iii.31. This species agrees so closely to the somewhat meagre description of the type of *Agriogomphus sylvicola*, that I have little hesitation in regarding it as the opposite sex of that species, although it comes from a far-removed locality. A distance of 400 miles separated the localities in which the two females were taken and Williamson's species *jessei* was taken in Colombia on the western side of the watershed, so that the argument of widely separated localities bears no weight. *A. sylvicola* Selys differs from *A. jessei* (Williamson) by the complete antehumeral stripe and by the single row of discoidal cells in both fore- and hind-wings. Two females in the Selysian collection, Brussels Museum, one of which is the *type*: allotype male in my own collection at present but will eventually, together with the whole of the collection, be deposited in the British Museum.

Mr. J. E. Roberts, who has seen this supposed allotype male of *Agriogomphus sylvicola* from Peru, expresses his opinion that it would not be safe to associate it with the female *A. sylvicola* in view of the differences of locality, and suggests that a name should be given to it which may be confirmed in the future if the male be found to belong to a new species: in adopting his advice, I suggest the name *Agriogomphus aquicola*.

Agriogomphus jessei (Williamson), 1918.

Ischnogomphus jessei Will. 1918, *Occas. Pap. Mus. Zool. Michigan* **52**: 10.

Male. Abdomen 32·5 mm. Hind-wing 24 mm.

This species differs from *A. sylvicola* Selys by its larger size, by the presence of 2 rows of discoidal cells in both fore- and hind-wings, instead of only a single row, and by the different character of the thoracic markings. It resembles *sylvicola* by its general dull inconspicuous bluish-green colouring, by its anal appendages and genitalia, by the 4-sided tibiae and, with the exception of the discoidal field, by its venation generally. An increase in the melanism of *jessei* such as might be expected to develop in very adult age would result in the thoracic markings closely resembling those of *sylvicola*, so that it is evident that the two species are very closely related and it is even possible that they may be merely races of one species.

I take this opportunity of publishing a note on another species of Gomphidae, viz. *Merogomphus longistigma tamaracherriensis* Fraser. Mr. D. E.

Kimmins, who has examined a specimen collected in Tinnevelly, S. India, by Mr. Henry, expresses his opinion that it is a good species, and points out that it not only differs from *M. longistigma* (Fraser) in its colour and markings but also by the shape of the anal appendages which taper rather evenly from base to apex, whereas in *longistigma* these same appendages are greatly swollen at the base and narrow abruptly at the junction of the basal and middle thirds. This form should be known in future as *Merogomphus tamaracherriensis* Fraser.

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Ris, F., 1909, *Cat. Coll. Selys, Libellulinen* **9** : 10, t.f. 1.

Ris, F., 1913, Odonatenfauna von Argentina. *Mém. Soc. ent. Belg.* **22** : 55, 102.

Fraser, F. C., 1934, *Fauna British India, Odonata* **2** : 313.

NEW PALAEARCTIC FUNGUS-GNATS (DIPTERA, FUNGIVORIDAE)

By A. A. Stackelberg.

Hadroneura kamtshatica sp. n.

Hypopygium moderately short and broad, with well-developed cerci, distal margin of which ornamented with a row of dense bristles; style with a large basal tooth-like process.

Male. Head black, grey pollinose, with yellow hairs. Palpi and proboscis blackish-brown. Antennae moderately long, black; second basal joint brownish-yellow. Thorax black; mesonotum greyish pollinose, not shining, with 4 moderately broad black longitudinal stripes. Mesonotal bristles yellow. Pleura and postscutellum greyish pollinose, not shining; pleurotergite with dense, but short yellowish hairs. Coxae and legs dark yellow; trochanters brown; tarsi blackish-brown. Tibial spurs yellow. Front tibiae about as long as four basal joints of front tarsi taken together. Claws normal, with a small tooth-like process at base; empodium distinctly developed. Wings brownish tinged; wing veins of the front half of wing rather thick. Wing-venation as in *Hadroneura palmeni* Lundstr., but anal vein slightly longer. Abdomen black, moderately shining, with yellowish hairs. Hypopygium (figs. 1, 2) broad; coxite large and robust; style moderately long, with a tooth-like process at base; cerci large with a comb-like row of long and dense flattened bristles on distal margin. Wing about 4·5 mm.

Distribution.—Kamchatka, Kamchatka river near Kljutshevsk, 8.vi.1909, 1 ♂—type (*Sapozhnikov*). Type in the Collection of the Zoological Institute, Academy of Sciences, Leningrad.

Boletina kowarzi sp. n.

Species of medium size. Pleurotergite hairy. Mesonotal bristles dark brown. Similar to *Boletina dubia* Mg. and *Boletina villosa* (Landr.) Edw., but differs in hypopygium.

Male. Head black, slightly shining, with dark brown hairs. Palpi blackish-brown. Antennae moderately short, black. Thorax black. Mesonotum black, polished, without longitudinal stripes. Acrostichal and dorsocentral bristles dark brown. Pleura and postscutellum polished black, slightly grey pollinose. Coxae and legs dark yellow. Tarsi dark (brown to black). Tibial spurs dark brown. Mid- and hind-tarsal claws of ♂ equal, with a small basal tooth (front tarsi of type absent). Wings slightly brownish tinged; costal vein reaches to about $\frac{1}{3}$ of the distance from r_5 to m_1; *sc* ending above base of r_5; sc_2 absent; stem of *m*-fork about as long as *rm*; basis of cubital fork at about level of *m*-fork; *an* terminating at about level of basal third of *cu*-fork. Halteres yellowish. Abdomen black, polished. Hypopygium (figs. 3, 4) moderately large and long, black; style forked; medial arm of style shorter than the lateral one, without terminal appendage. Wing about 4 mm.

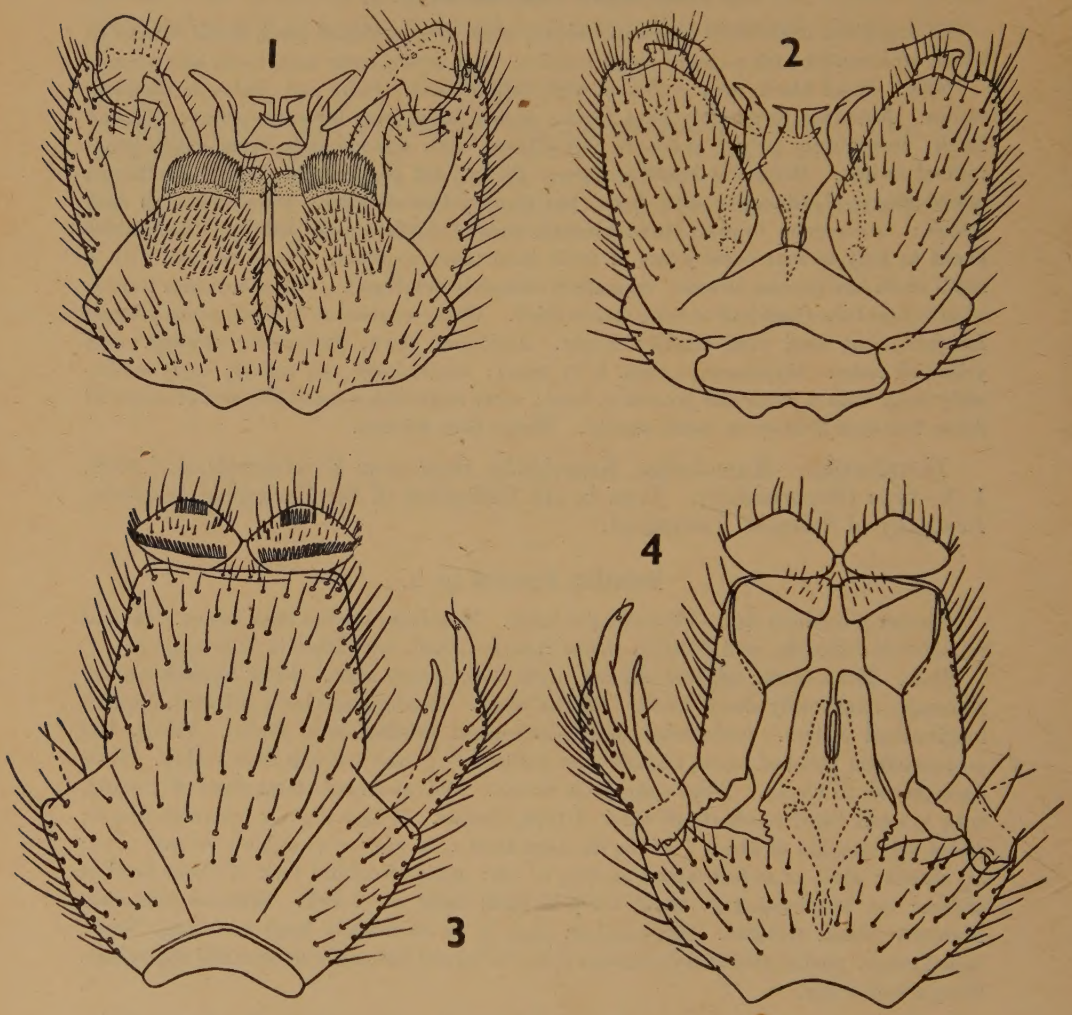
Distribution.—Germany. Described from 1 ♂ (type) from Bad Liebenstein, Thuringia, 28.vi.1877 (*Fr. Kowarz*). Type in the Collection of the Zoological Institute, Academy of Sciences, Leningrad.

Boletina verticillata (Lackschewitz *in litt.*) sp. n.

Small black species with very long cerci and broad knife-like style. Pleurotergite bare.

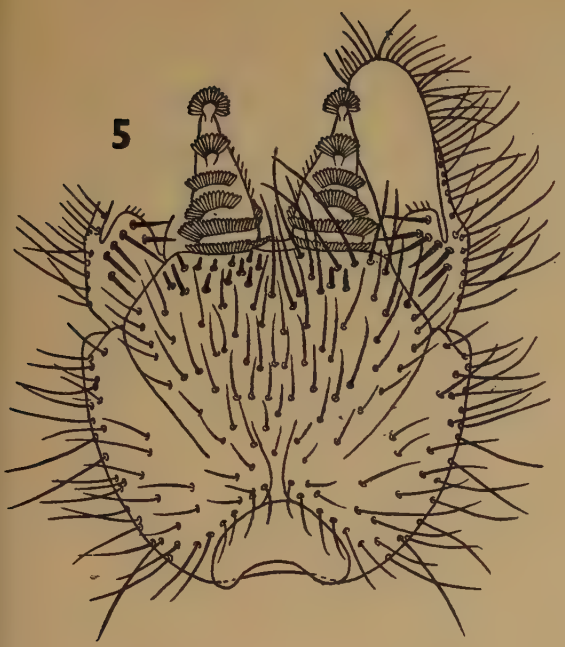
Male. Head black, slightly greyish pollinose. Palpi yellow. Antennae long, black; first flagellar joint yellow at base. Thorax black; mesonotum polished black; sides of

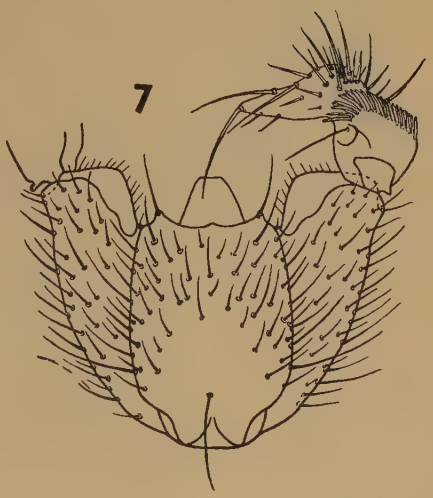
mesonotum and humeral tubercle light grey pollinose. Pleura and postscutellum greyish pollinose; pleurotergite bare. Mesonotal bristles light yellow. Coxae and legs yellow; basal half of hind coxae dark, blackish-grey. Tibial spurs yellow. Tarsi blackish-brown. The first joint of front tarsi slightly shorter than tibiae; the fourth joint of front tarsi $1\frac{1}{2}$ times as long as the fifth. Tarsal claws of the male small, not broadened, symmetrical,

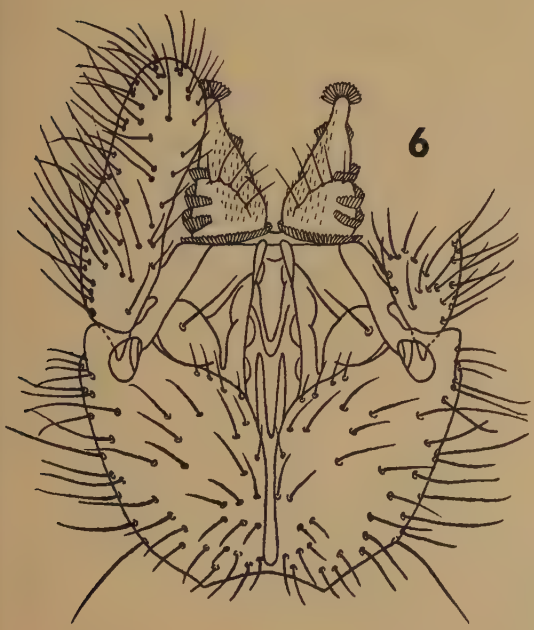


FIGS. 1–4.—1, *Hadroneura kamtshatica* sp. n. ♂. Hypopygium from above; 2, *Hadroneura kamtshatica* sp. n. ♂. Hypopygium from below; 3, *Boletina kowarzi* sp. n. ♂. Hypopygium from above; 4, *Boletina kowarzi* sp. n. ♂. Hypopygium from below.

with a small basal tooth. Wings clear, slightly yellowish at base. Costal vein reaches to about $\frac{1}{5}$ of the distance from r_5 to m_1; *sc* ending above base of r_5; sc_2 absent; stem of *m*-fork about as long as *rm*; basis of cubital fork slightly behind middle of *m*-fork-stem; cubital fork-stem with short bristles; *an* terminating at about level of basal third of cubital fork. Halteres whitish. Abdomen black, polished. Hypopygium (figs. 5, 6)







FIGS. 5–8.—5, *Boletina verticillata* sp. n. ♂. Hypopygium from above; 6, *Boletina verticillata* sp. n. ♂. Hypopygium from below; 7, *Sciophila fridolini* sp. n. ♂. Hypopygium from above; 8, *Sciophila fridolini* sp. n. ♂. Hypopygium from below.

large and long; cerci very long, about 3 times as long as broad at base, with about 5 transverse rows of flattened bristles; style broad, knife-like, long, with truncate tip, on the lateral margin with moderately long bristles. Wing about 3 mm.

Distribution.—N.W. Siberia, between Small Ural (Malyj Ural) and Lake Vartsha-ty, distr. Obdorsk, 28.viii.1925, 1 ♂—type (*V. Y. Fridolin*). Type in the Collection of the Zoological Institute, Academy of Sciences, Leningrad.

Sciophila fridolini sp. n.

Similar to *Sciophila plurisetosa* Edw., but differs in hypopygium.

Male. Head black. Palpi blackish. Antennae black, with yellowish-brown basal joints; flagellar joints as long as broad or slightly longer than broad. Thorax black; mesonotum polished black; pleura sometimes yellowish-brown. Coxae and legs dark

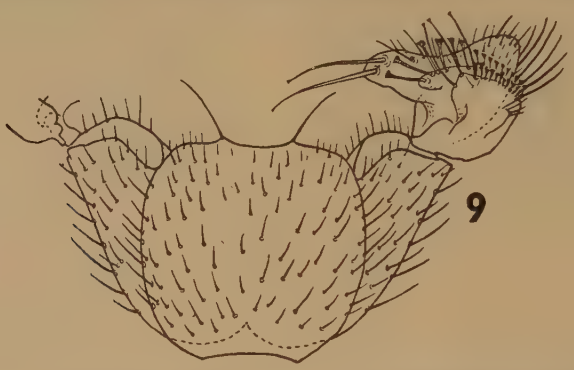


Fig. 9.—*Sciophila vakulenkoi* sp. n. ♂. Hypopygium from above.

yellow; tarsi brown. Wings clear, slightly yellowish at base; wing membrane covered with micro- and macrotrichia; cu_{1a} normal, not interrupted. Abdomen black. Hypopygium (figs. 7, 8) below with a very large triangular incision, reaching to about basal fourth of hypopygium; ventral lamella of style long, triangular, with acute medial end, bristly haired; 9th tergite with slightly concave distal margin. Wing about 3 mm.

Distribution.—Kola Peninsula, Chibinä, 1 ♂—type (*V. Y. Fridolin*). Type in the Collection of the Zoological Institute, Academy of Sciences, Leningrad.

Fig. 10.—*Sciophila vakulenkoi* sp. n. ♂. Hypopygium from below.

Sciophila vakulenkoi sp. n.

Similar to *Sciophila fuliginosa* (Holmgren) Lundstrom, but differs by longer medial fork-stem, which is as long as *rm* or even longer, by yellowish wing-veins and differences in the hypopygium.

Male. Head black. Palpi and antennae uniformly black. Thorax black, slightly polished. Abdomen black. Thorax and abdomen covered with yellow hairs. Coxae black, slightly greyish pollinose. Femora brown; tibiae yellowish-brown; tarsi blackish-brown. First joint of front tarsi about as long as front tibia. Wings slightly brownish tinged, with micro- and macrotrichia. Wing-veins, especially costal vein, yellowish; *m*-fork-stem as long as *rm* or slightly longer. Hypopygium (figs. 9, 10) broad and short; style with moderately short ventral lobe, but without lateral tuft; 9th tergite quadratic, with nearly straight distal margin. Wing about 4 mm.

Distribution.—Novaja Zemlja, Southern Isle, 1925 (*Vakulenko*). Type in the Collection of the Zoological Institute, Academy of Sciences, Leningrad.

A NEW GENERIC NAME IN THE DYTISCIDAE (COLEOPTERA)

By J. Balfour-Browne, M.A., F.R.E.S.

Neoscutopterus nom. n.

Scutopterus Sharp (1882, *On Aq. Carn. Col. Sci. Trans. R. Dublin Soc.* **2** : Ser. 2 : 606) *nec* Aubé, Crotch *partim.*

Crotch cites as genotype of *Scutopterus* the species *coriaceus* Cast. which was the sole species described in the genus *Meladema* created by Castelnau (1835, *Etudes Ent.* : 95) and is therefore the genotype of *Meladema* and in consequence *Scutopterus* must fall as a synonym of *Meladema.*

Aubé (1836, *Icon. Col.* **5** : 94) mentions *Scutopterus* after *Meladema* as a division of the genus *Colymbetes* in the sense of a subgenus. This would appear to constitute the first valid use of the name, and two species are included, *coriaceus* and *pustulatus* (Rossi). The name appears therefore to have been published as a synonym in the first valid publication, being ascribed to Eschscholtz. Sturm (1843, *Cat. Käf.-Samml.* : 39) uses *Scutopterus* as a valid genus with " Colymbetes Aubé non Clairv." as a synonym and includes both *coriaceus* and *pustulatus* and a third species, *anthracinus*, which is said to be from Mexico, but has never been described. In the event of an objection to the claim that Aubé's use of the name constitutes publication, Sturm's date of publication precedes that of Crotch and is indubitably valid as, though no diagnosis or description accompanies the use of the name, both species *coriaceus* and *pustulatus* are recognisable.

Under *Meladema* in Zimmermann (1920, *Junk, Coleopt. Cat.*, **71** : 214) a synonym is given :—

Scutopterus Lacord. (1835, *Fn. Ent. Paris* **1** : 308).—Gemm. & Har. (1868. *Cat. Col.* **2** : 447).—J. Lec. & Horn (1883, *Classif. Col. North America* : 66).

In fact the reference to Lacordaire is to *Cymatopterus* and it is unfortunate that this reference has been repeated in Neave (1940, *Nomencl. Zool.* **4** : 159). The Leconte & Horn use of the name is undoubtedly following Crotch and is therefore only an *ex parte* reference.

Sharp (1882, *On Aq. Carn. Col.* : 606) restricts the use of the name to only the two American species, *angustus* (Lec.) and *horni* Crotch, and it is in this sense that the name has since been used, but, as I have shown, *Scutopterus* Crotch is a synonym of *Meladema* and the two American species are therefore without a valid generic name and for them I propose **Neoscutopterus** nom. n., the diagnosis of the genus being that given by Sharp (*loc. cit.*). No genotype appears to have been designated, and accordingly I hereby select as genotype *Agabus angustus* J. Leconte (1850).

NEW OR LITTLE-KNOWN SPECIES OF EXOTIC TIPULIDAE (DIPTERA)

By Professor Charles P. Alexander, F.R.E.S.

Massachusetts State College, Amherst, Massachusetts.

In the present series of papers I plan to publish the descriptions of new crane-flies and to supply records of distribution in the cases of rare and insufficiently-known species. In this paper I am considering certain forms from southern and south-western China (Kwangtung, Yunnan, Szechwan) that have been received in recent years. Most of these species were secured by Mr. J. Linsley Gressitt and Mr. F. K. To in northern Kwangtung in the spring of 1940, particularly in the Kau-lin San, Lien-p'ing District, and at various stations while en route to these mountains. Further material was included in the very extensive Franck collections from Mount Omei, Szechwan, whence very many new species have been described by the writer in recent years (*Philippine Journal of Science*, 1931–1941). One further unusually interesting species of *Tipula* was sent to me for determination by Dr. Alan Stone, in charge of the Diptera in the United States National Museum. I am very indebted to all of the entomologists named for their friendly co-operation. Except where indicated to the contrary, the types of the novelties will be returned to the Zoological Museum, Lingnan University, Canton, when conditions permit.

Dolichopeza (Trichodolichopeza) sparsihirta sp. n.

General coloration of mesonotum brown, the praescutal stripes three, poorly indicated; pleura yellow, variegated with darker on the propleura, sternopleurite and meron; femora obscure brownish-yellow, the tips narrowly infuscated; tibiae pale brown, the tips narrowly darkened, the bases about equally whitened; tarsi white; wings before cord with a weak brownish tinge, the outer radial cells strongly darkened; stigma oval, dark brown, preceded and followed by restricted white areas; sparse macrotrichia in outer ends of cells R_3 to 2*nd* M_2, inclusive; cell M_1 small, about one-third its petiole; abdomen brownish-black, the tergites narrowly ringed with light yellowish-grey at near mid-length.

Female.—Length about 10 mm.; wing 8 mm.

Frontal prolongation of head light brown; palpi pale brown, the tips of the segments somewhat darker. Antennae with scape and pedicel yellow, flagellum brown; flagellar segments cylindrical; verticils long and conspicuous. Head medium brown; anterior vertex broad, without tubercle.

Pronotum brown. Mesonotal praescutum obscure brownish-yellow with slightly differentiated pale brown stripes, the cephalic portion of the median stripe and outer portions of lateral stripes a trifle darker; humeral region more brightened; posterior sclerites of notum brown, the mediotergite still darker. Pleura obscure yellow with a brown girdle extending across propleura, sternopleurite and meron. Halteres elongate, dark brown, the base of stem restrictedly pale. Legs with the coxae testaceous-yellow, the extreme base of fore pair darkened; trochanters pale yellow; femora obscure brownish-yellow, the tips narrowly more infuscated, the amount subequal on all legs; tibiae pale brown, the extreme base whitened, the tip equally narrowly darkened; tarsi snowy-white. Wings (fig. 1) before cord with a weak brownish tinge, the cells beyond cord, especially in outer radial field, strongly darkened; stigma oval, dark brown, preceded and

followed by restricted whitish areas, the former involving all of cell R_1; veins dark brown. Sparse macrotrichia in outer ends of cells R_3 to 2*nd* M_2, inclusive, most extensive in cell R_5 where there is a linear series of about thirty trichia in distal third of cell (position shown by stippling in figure). Venation: R_{1+2} entirely atrophied; *Rs* long and gently arcuated, about one-half longer than R_{2+3}; cell M_1 small, about one-third its petiole; *m–cu* nearly its own length before fork of *M*; cell 2*nd A* narrow.

Abdomen brownish-black, the tergites at near midlength narrowly ringed with light yellowish-grey, the dark bases and apices much wider on the intermediate segments, narrowed on the outer ones. Ovipositor with cerci very gently upcurved, their tips acute.

Holotype, ♀, Kau-lin San, Kwangtung, altitude 2300–3000 feet, April 24, 1940 (*Gressitt & To*).

Dolichopeza (*Trichodolichopeza*) *sparsihirta* is the first Oriental member of the subgenus to be defined, the other species being Ethiopian in distribution.

Figs. 1–4.—1, *Dolichopeza* (*Trichodolichopeza*) *sparsihirta* sp. n; venation. 2, *Tipula* (*Formotipula*) *stoneana* sp. n; venation. 3, 4, the same; details of male hypopygium. (Symbols: *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *s*, sternite; *t*, tergite.)

By my key to the subgeneric groups of *Dolichopeza* (1931, *Philippine Journal of Science* **46**: 270), the fly runs directly to this subgenus and the reference is presumably correct. However, the possibility is not excluded that it may represent an aberrant member of the subgenus *Mitopeza* Edwards, although the structure of the ovipositor is different.

Tipula (Formotipula) stoneana sp. n.

General coloration orange; head black, probably pruinose in fresh specimens; legs black; wings with a strong blackish suffusion; R_{1+2} entire; abdomen with basal seven segments orange, the outer two segments black in both sexes; male hypopygium large and very complicated in structure, especially the dististyle; eighth sternite bearing two elongate darkened clavate lobes on posterior border.

Male.—Length about 16–18 mm.; wing 18·5–23 mm.; antenna about 4–4·3 mm.

Female.—Length about 18–19 mm.; wing 20–21 mm.

Described from specimens in alcohol. Head, including frontal prolongation and nasus,

black, probably pruinose in fresh material; palpi brown. Antennae brownish-black, the first flagellar segment somewhat paler; flagellar segments vaguely incised; longest verticils exceeding the segments.

Thorax uniform orange. Halteres with stem obscure yellow, knob blackened. Legs with the coxae and trochanters orange; remainder of legs black, the femoral bases restrictedly obscure yellow; claws with a single basal tooth. Wings (fig. 2) with a strong blackish suffusion, the prearcular and costal portions slightly more suffused; stigma slightly darker than the ground; veins brown. Venation: R_{1+2} entire; cell 1*st* M_2 unusually long for a member of the subgenus; M_{3+4} exceeding the basal section of M_{1+2}.

Abdomen with basal seven segments orange; remainder of abdomen abruptly black. Male hypopygium (figs. 3, 4) with the ninth tergite, 9*t*, massive, the median region of the caudal border with a small but conspicuous V-shaped notch to form two submedian lobes that are provided with conspicuous setae. Outer lobe of basistyle, *b*, stout, with abundant and conspicuous long black setae. Dististyle, *d*, very complex, as shown; beak very slender; on outer margin at base of beak with a slender pale lobule that bears a few strong setae; on face of style a very long and conspicuous blackened arm, at its apex slightly dilated and produced into an acute spine. Gonapophyses, *g*, appearing as blackened fleshy clavate lobes, provided with long conspicuous setae. Eighth sternite, 8*s*, with caudal portion produced into two elongate clavate darkened lobes that are sparsely provided with long conspicuous setae, these lobes well separated at bases and gently divergent.

Holotype, ♂ in alcohol, Chengkiang, Yunnan, June 2, 1940 (*C. L. Pu*); United States National Museum. *Allotopotype*, ♀. *Paratopotypes*, 1 ♂, 1 ♀, in author's collection.

I take great pleasure in naming this species in honour of Dr. Alan Stone, to whom I am very greatly indebted for invaluable co-operation in my study of the TIPULIDAE. The nearest relative of the present fly is *Tipula* (*Formotipula*) *hypopygialis* Alexander, likewise from southern China. This latter differs in details of venation and in the structure of the male hypopygium, which is less complex than in the present fly.

Limonia (Libnotes) sappho sp. n.

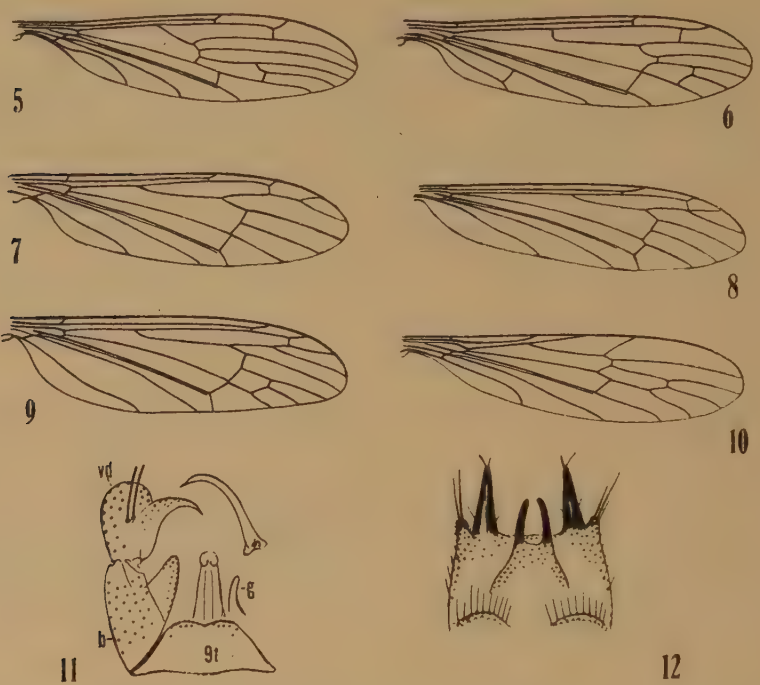
Allied to *amatrix* Alex.; mesonotal praescutum ochreous, with two submedian reddish-brown stripes; central portion of scutum and scutellum pale; femora black, the distal fourth yellow, enclosing a black subterminal ring; wings with a light yellow tinge, conspicuously patterned with light and dark brown; *Rs* unusually straight and oblique; ovipositor with cerci conspicuously bidentate at tips.

Female.—Length about 9·5 mm.; wing 9·5 mm.

Rostrum and palpi black. Antennae with the scape black; pedicel and flagellum abruptly orange-yellow; basal flagellar segments short-oval, the outer segments becoming more elongate (terminal segments broken). Head light fulvous, sparsely pruinose; anterior vertex narrow, less than one-third the diameter of scape.

Cervical region blackened. Pronotum light green. Mesonotal praescutum ochreous, the humeral region more greenish; two conspicuous, reddish-brown, submedian stripes separated by a much narrower median grey line; scutum and scutellum with the median area broadly pale, the centres of the scutal lobes and lateral portions of scutellum strongly infuscated, the lateral portions of scutal lobes ochreous; central portion of mediotergite dark brown, this area more expanded across the cephalic portion of sclerite, the remainder, with the pleurotergite, ochreous. Pleura ochreous yellow, with a narrow brownish-black longitudinal stripe extending from the propleura obliquely dorsad to the wing-root. Halteres with stem yellow, knob dark brown. Legs with the coxae yellow, tinged with greenish,

especially the posterior pair; trochanters yellow; femora black, including the extreme base, the distal fourth yellow, enclosing a broad black subterminal ring that much exceeds the narrow yellow apex or the slightly wider subterminal yellow ring; tibiae and tarsi black. Wings (fig. 5) with a light yellow tinge, the prearcular region, cell *Sc* and outer margin of radial field more saturated yellow; a conspicuous dark brown and paler brown pattern, arranged as follows: Basal half of cell *Sc* darkened; darker brown seams along



FIGS. 5–12.—5, *Limonia* (*Libnotes*) *sappho* sp. n.; venation. 6, *Limonia* (*Discobola*) *acurostris* sp. n.; venation. 7, *Hexatoma* (*Hexatoma*) *mediocornis* sp. n.; venation. 8, *Hexatoma* (*Hexatoma*) *prolixicornis* sp. n.; venation. 9, *Hexatoma* (*Eriocera*) *gressittiana* sp. n.; venation. 10, *Styringomyia princeps* sp. n.; venation. 11, *Limonia* (*Discobola*) *acurostris* sp. n.; male hypopygium. 12, *Styringomyia princeps* sp. n.; ovipositor.

(Symbols: *b*, basistyle; *g*, gonapophysis; *dd*, dorsal dististyle; *t*, tergite; *vd*, ventral dististyle.)

cord, outer end of cell 1*st* M_2, distal half of vein *Cu* and as conspicuous marginal seams on veins R_2 and free tip of Sc_2, R_3, M_{1+2}, M_3, M_4 and both anal veins, on vein 2*nd A* very extensive; no apical darkening on vein R_{4+5}; paler brown washes in outer radial and medial fields to produce a weak reticulated pattern; a post-arcular darkening in cells *R* and *M*; marginal clouds between the veins in cells M_4, *Cu*, 1*st A* and 2*nd A*; veins yellow, darkened in the patterned areas. Venation: *Rs* unusually straight and oblique, arcuated only on outer fifth; cell 1*st* M_2 shorter than vein M_{1+2} beyond it; *m* angulated at near midlength; *m–cu* at near two-fifths the length of lower face of cell 1*st* M_2; cell 2*nd A* very strongly narrowed at base.

Abdomen greenish-yellow, more darkened laterally at base; cerci relatively short, conspicuously bidentate at tips.

Holotype, ♀, Kau-lin San, Kwangtung, altitude 2300–3000 feet, April 22, 1940 (*Gressitt & To.*)

Limonia (*Libnotes*) *sappho* is a member of the group of species centring about the Eastern Palaearctic *L.* (*L.*) *amatrix* (Alexander) and including among other species in the Oriental and Australasian regions, *L.* (*L.*) *klossi* Alexander, *L.* (*L.*) *perrara* Alexander, and *L.* (*L.*) *terrae-reginae* (Alexander). The present fly differs from all of the above in the coloration of the body, legs and wings, and in the details of venation, notably the nearly straight and oblique *Rs*.

Limonia (Discobola) acurostris sp. n.

General coloration of mesonotal praescutum dark chestnut-brown, still darker medially; thoracic pleura with a broad blackened longitudinal stripe, the ventral pleurites pale, grey pruinose; femora obscure yellow, with a broad black subterminal ring; wings yellow, with a heavy brown pattern that includes major entire areas, not ocellate as is common in the subgenus; cells basad of cord with numerous smaller brown dots; male hypopygium with the caudal margin of tergite only feebly emarginate; rostral prolongation of ventral dististyle a compressed blade that narrows to an acute point; spines of ventral dististyle very long, placed at base of prolongation.

Male.—Length about 8 mm.; wing 9 mm.

Rostrum and palpi black. Antennae black, only the short apical pedicels of the flagellar segments restrictedly paler; longest verticils subequal in length to the segments. Head dark blackish-grey; anterior vertex relatively narrow, about two-thirds the diameter of scape.

Pronotum obscure brownish-yellow. Mesonotal praescutum dark chestnut-brown, even darker medially, the entire central portion subnitidous, the lateral and humeral regions more yellow pollinose; lateral portions of praescutum and scutum more blackened; median region of scutum and base of scutellum heavy golden-yellow pollinose; remainder of scutellum and the postnotum brownish-black, sparsely pruinose. Pleura with a broad blackened longitudinal stripe on the dorsal pleurites and the pleurotergite; ventral pleurites pale, grey pruinose. Halteres with extreme base of stem yellow, the remainder darkened, the distal portion of stem and apex of knob obscure yellow, the base of knob conspicuously blackened. Legs with the coxae brownish-yellow; trochanters yellow; femora obscure yellow, with a broad black subterminal ring, the tips narrowly yellow, the amount about one-half of the subterminal dark ring; tibiae and tarsi light brown. Wings (fig. 6) with the ground colour yellow, slightly deeper and more saturated on the anterior third; wing disk with large, entire, dark brown areas, and numerous smaller brown dots; the major areas are as follows: Bases of cells *R* and *M*; origin of *Rs*, reaching costa; a narrow darkening at fork of *Sc*, continued caudad as a narrow line to the cord; stigmal area and a very broad posterior extension back to the cord; other large marginal areas at ends of all the cells, very extensive in cells M_4, *Cu*, 1*st A* and 2*nd A*; narrow dark seams on posterior cord, outer end of cell 1*st* M_2, and over the supernumerary crossvein in cell 1*st A*; the smaller brown dots are very numerous in all cells basad of cord, especially in cells R_1, *R*, *M* and *Cu*; veins yellow, darker in the clouded areas. Venation: R_{1+2} about two-thirds R_{2+3}; inner end of cell 1*st* M_2 arcuated.

Abdomen brown, the subterminal segments darker; incisures restrictedly pale; sternites more yellow; hypopygium yellowish-brown. Male hypopygium (fig. 11) with the tergite, 9*t*, transverse, the caudal margin only slightly emarginate, the lateral lobes thus very broad and low. Basistyle with ventromesal lobe slender, pale. Dorsal dististyle, *dd*, a strongly curved blackened rod, its tip acute (in figure shown detached so as not to obscure the ventral style). Ventral dististyle, *vd*, with the body relatively small, the rostral portion correspondingly large, appearing as a broad compressed blade that narrows to an acute

point, the apex and ventral edge of the blade more sclerotised and provided with fewer setae than the dorsal portion; the usual rostral spines two, entirely pale, very long, placed in the notch between the body of style and the base of the prolongation, closely approximated at base. Gonapophyses, *g*, with mesal-apical lobe nearly straight, the tip obtuse.

Holotype, ♂, Mount Omei, Szechwan; Chu Lao Tong Temple, altitude 7000 feet, July 28, 1935 (*Franck*); Alexander Collection.

Limonia (*Discobola*) *acurostris* is so different from the seven other species of the subgenus now known from Asia and its adjoining islands that comparison is scarcely necessary. The unbroken nature of the major brown areas of the wing and the male hypopygium are quite different from all other regional species.

Hexatoma (Hexatoma) mediocornis sp. n.

General coloration dark grey; antennae (male) relatively elongate, only a little shorter than the body; halteres infuscated; wings with a weak brownish tinge, the stigma very slightly darker; cell R_3 very short; vein R_3 short, oblique to suberect, shorter than R_{3+4}.

Male.—Length about 5 mm.; wing 5·6 mm.; antenna about 4·6 mm.

Female.—Length about 6 mm.; wing 6·3 mm.; antenna about 1 mm.

Rostrum dark brown; palpi long and conspicuous, brown, the outer segments passing into black. Antennae (male) 6-segmented, nearly as long as body, brownish-black; first flagellar segment shorter than the second; third and fourth subequal, about one-third longer than the second; first flagellar segment stout, especially basally; first three flagellar segments with strong scattered setae from raised tubercles; outer segment with the setae more slender and normal. Antennae (female) 9-segmented; first flagellar segment about as long as the three succeeding segments combined; second and third subequal; remaining flagellar segments gradually decreasing in size, the outer two oval; segments with elongate delicate setae that are not spinous. Head grey; vertical tubercle of male bulbous, entire; of female much smaller.

Thorax almost uniform dark grey, the praescutum and scutum not or scarcely patterned with darker; praescutal setae lacking. Halteres infuscated, especially the knobs. Legs with the coxae dark grey; trochanters brownish-yellow; remainder of legs brownish-black, the femoral bases restrictedly paler. Wings (fig. 7) with a weak brownish tinge, the oval stigma very slightly darker; veins pale brown. Veins beyond cord very weak to subevanescent, especially in the medial field; no trichia on these veins excepting a very restricted series of about ten on distal section of vein R_5. Venation: Cell R_3 very short, veins R_4 and R_{3+4} subequal or the former a little longer; vein R_3 short, oblique to suberect, shorter than R_{3+4}; *m–cu* at or just beyond the fork of *M*.

Abdomen, including hypopygium, black, grey pruinose. Ovipositor with obtuse valves, as in the subgenus.

Holotype, ♂, Sinfung to Lung Kai, Kwangtung, April 12, 1940 (*Gressitt*). *Allotopotype*, ♀.

Hexatoma (*Hexatoma*) *mediocornis* is well distinguished from the allied species of the subgenus in eastern Asia by the length of the antennae of the male which are shorter than in *H.* (*H.*) *prolixicornis* sp. n., but much longer than in the remaining species in China and Japan.

Hexatoma (Hexatoma) prolixicornis sp. n.

General coloration pale brown, sparsely pruinose; antennae (male) greatly elongated, exceeding twice the length of body or wing; flagellar segments provided with scattered spinous setae and an abundant erect pale pubescence; wings brownish-grey, stigma lacking; outer medial veins very weak and evidently in process of atrophy.

Male.—Length about 6 mm.; wing 6·5 mm.; antenna about 13·5 mm. Antenna: 1st flagellar segment 2 mm.; 2nd, 3 mm.; 3rd, 5·2 mm.; 4th, 3 mm.

Rostrum pale brown; palpi dark brown. Antennae (male) unusually long, exceeding twice the length of body, as shown by the measurements, dark brown throughout; all four flagellar segments provided with conspicuous scattered black spinous setae (12–15 on flagellar segments two and three; 5–6 on segment four); besides this armature, the segments provided with an abundant erect pale pubescence. Head dark brown, heavily light grey pruinose; anterior vertex wide, approximately five times as wide as diameter of scape; tubercle low and relatively inconspicuous; eyes relatively small, narrowly separated beneath.

Pronotum pale brown. Mesonotum pale brown, sparsely pruinose, the praescutum without stripes. Pleura pale brown, conspicuously pruinose. Halteres pale. Legs with the coxae pale brownish-yellow, sparsely pruinose; trochanters yellow; remainder of legs broken. Wings (fig. 8) brownish-grey, stigma lacking; veins pale brown. Macrotrichia of veins virtually lacking, behind *R* there being a sparse series on distal section of R_5; outer medial veins very weak and faint, evidently in process of atrophy. Venation: Sc_1 ending about opposite fork of *Rs*, Sc_2 a short distance from its tip; R_2 a trifle longer than R_{1+2}, at fork of R_{2+3+4}; R_{2+3+4} longer than R_3; *m–cu* about one-third its length beyond the fork of *M*, a little exceeding the distal section of Cu_1.

Abdomen dark brown, the surface weakly pruinose; hypopygium more brownish-yellow.

Holotype, ♂, Tai-kang to Mui-hang, via Lan-tin, Tung-men District, Kwangtung, April 9, 1940 (*Gressitt & To*).

Hexatoma (*Hexatoma*) *prolixicornis* is readily told from other allied species in eastern Asia by the unusual length of the antennae in the male, in conjunction with the venation, especially the long R_{2+3+4}, with R_2 at its fork.

Hexatoma (Eriocera) gressittiana sp. n.

General coloration of thorax dark brown, the praescutum with three more blackened stripes; antennae (male) elongate, at least twice the length of the wing; head and thorax with unusually long and abundant, erect, black setae; legs brown to brownish-black; wings light brown, the costal border and seams on the longitudinal veins darker brown; cell M_1 lacking.

Male.—Length about 13 mm.; wing 15·5 mm.; antenna exceeding 30 mm.

Rostrum obscure brownish-yellow, very short; palpi black. Antennae (male) elongate, at least twice the length of wing; in the unique type, the terminal segments broken; scape obscure yellow beneath, darker on dorsal surface; scape unusually tumid, bearing a conspicuous lobe on lower face near base; pedicel brown; flagellum black; flagellar segments very long-cylindrical; only the basal three preserved, these becoming progressively more elongate (1st segment, 6 mm.; 2nd, 8 mm.; 3rd, 14·3 mm.); all preserved flagellar segments with a double row of spinous bristles, with about 21 pairs on segment one, 29 on segment two and 28 on segment three. Head brownish-grey, the orbits lighter grey; vertical tubercle paler brown except in front, unusually large and tumid, approximately as long as, but even stouter than the scape; vertical tubercle clothed with very long erect setae; other groups of similar setae on genae and mouthparts.

Pronotum and mesonotum almost uniformly dark brown, the praescutum with three more blackened stripes, the usual interspaces reduced; entire praescutum, scutum and scutellum abundantly clothed with long erect dark setae, these occurring both on the praescutal interspaces and on the stripes. Pleura black, sparsely pruinose, the meron and pleurotergite more heavily so; groups of long black setae on propleura and pleurotergite. Halteres with stem brown, knob more blackened. Legs with the coxae black, sparsely

pruinose; trochanters black; remainder of legs brown to brownish-black, conspicuously hairy. Wings (fig. 9) broad, especially across the basal fourth; ground colour light brown, patterned with darker brown, this including the prearcular field; cells *C* and *Sc*; stigma; and broad seams along cord, outer end of cell 1*st* M_2, and all longitudinal veins; veins brown. Macrotrichia on veins of outer radial field, including series on veins R_{2+3+4}, R_{2+3}, R_3, R_4 and R_5, with very sparse scattered trichia on second and third sections of vein M_{1+2}; veins R_{1+2}, R_2 and all outer branches of *M* and *Cu* without trichia. Venation: Sc_1 ending beyond four-fifths the length of R_{2+3+4}, Sc_2 some distance from its tip; R_{1+2} and R_{2+3} subequal; *m–cu* just beyond the fork of *M*; cell M_4 very wide at margin, subequal in extent to cell 1*st A*; distal end of cell *Cu* widened.

Abdomen, including hypopygium, black.

Holotype, ♂, Sinfung to Lung Kai, Kwangtung, April 12, 1940 (*Gressitt*).

I am privileged to name this distinct fly in honour of the collector, Mr. J. Linsley Gressitt. From other regional species of the subgenus that have cell M_1 lacking and the antennae of male greatly lengthened, the fly differs very conspicuously in the heavily patterned wings and in the unusual development of setae on the head and thorax. Despite certain venational features, the species will probably be placed best in the *verticalis* group.

Styringomyia princeps sp. n.

Size large (wing, female, 5·5 mm.); general coloration testaceous brown; femora yellow, the fore and middle pair each with a single narrow pale brown subterminal ring, the posterior femora uniformly pale yellow; wings with a strong yellow tinge, with a weak brown cloud on anterior cord; ovipositor with both cerci and hypovalvae blackened and sclerotised.

Female.—Length about 6·5 mm.; wing 5·5 mm.

Rostrum yellowish-brown; palpi pale brown. Antennae with the scape light brown, pedicel more testaceous; flagellum obscure yellow; flagellar segments passing through oval to elongate; verticils long and conspicuous. Head light brown; setae proclinate.

Pronotum and mesonotum testaceous brown, without distinct pattern; scutellum and postnotum somewhat clearer yellow; setae erect and coarse but relatively sparse; two long setae on scutellum. Pleura testaceous brown. Halteres pale, knob weakly darkened. Legs with coxae and trochanters pale; femora yellow, the fore and middle pair each with a single, narrow, pale brown, incomplete, subterminal ring, broken beneath, the pale apex beyond approximately twice the ring; posterior femora uniform pale yellow; tibiae yellow, the tips very narrowly and inconspicuously infuscated, the posterior pair uniform yellow; tarsi yellow, the last segment darkened. Wings (fig. 10) with a strong yellow tinge, the anterior cord and outer end of cell 1*st* M_2 weakly darkened, best indicated by a deepening in colour of the veins, *r–m* brown, remaining veins yellow. Costal fringe relatively long and dense. Venation: Cell 2*nd* M_2 sessile; vein 2*nd A* simple, curved gently to margin, the cell wide.

Abdominal tergites brownish-yellow, the extreme caudal borders of segments darkened to produce a scarcely differentiated line; sternites clearer yellow. Ovipositor (fig. 12) with both cerci and hypovalvae heavily blackened and sclerotised, as shown.

Holotype, ♀, Kau-lin San, Kwangtung, altitude 3500 feet, April 21, 1940 (*Gressitt & To*).

Styringomyia princeps is quite distinct from all other described species, differing especially in the unusually large size, immaculate posterior femora, and structure of the ovipositor. By Edwards's key (1914, *Trans. ent. Soc. Lond.* **1914** : 210–212), the fly runs to *S. didyma* Grimshaw, a very different species.

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